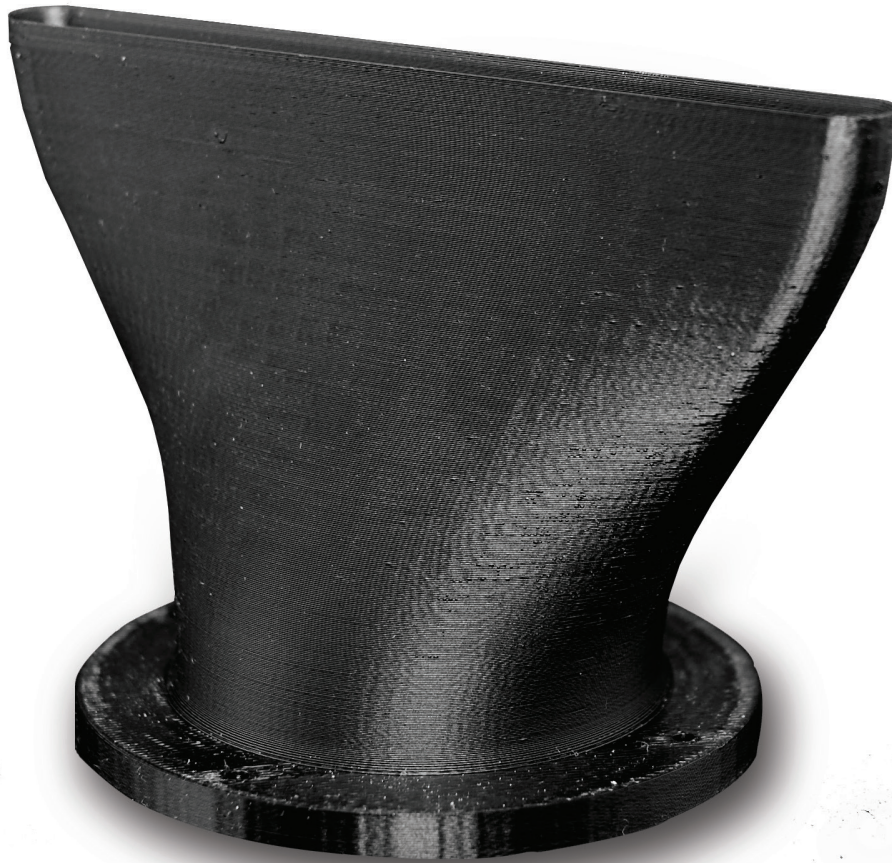


# PC-ABS



## FDM Thermoplastic Filament

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes.



## Overview

PC-ABS is a blend of polycarbonate (PC) and acrylonitrile butadiene styrene (ABS) thermoplastics. The result is an FDM filament that exhibits optimal characteristics of each – excellent strength, high toughness and heat resistance, and good flexural strength. Choose PC-ABS when you need the strength of PC but the impact resistance of ABS.

PC-ABS is suitable for a variety of applications that include prototyping, tooling and low-volume production. Available colors are black and white.

## Contents:

Ordering Information . . . . .	3
Physical Properties . . . . .	5
Mechanical Properties . . . . .	6
Appendix . . . . .	8

## Ordering Information

**Table 1. Printer and Support Material Compatibility**

Printer	Model Tip (Slice)	Support Material	Support Tip
F370™	F123 Head (5, 7, 10, 13 slice)	QSR Support (soluble)	F123 Head (all slices)
Fortus 360mc™	T10 (5 slice)	SR-20™ (soluble)	T12SR20 (all slices)
	T12 (7 slice)		
	T16 (10 slice)		
	T20 (13 slice)		
Fortus 400mc™	T10 (5 slice)	SR-20 (soluble)	T12SR20 (all slices)
	T12 (7 slice)		
	T16 (10 slice)		
	T20 (13 slice)		
Fortus 380mc™/450mc™	T10 (5 slice)	SR-110™ (soluble)	T12SR100 (all slices)
	T12 (7 slice)		
	T16 (10 slice)		
	T20 (13 slice)		
Fortus 900mc™/F900™	T12 (7 slice)	SR-20 / 110 (soluble)	T12SR20 / 100 (all slices)
	T16 (10 slice)		
	T20 (13 slice)		

### Build Sheet

#### Low Temperature

- 0.02 x 26 x 38 in.
- 0.02 x 16 x 18.5 in.
- 0.02 x 14 x 16.5 in.
- 0.03 x 16 x 18.25 in.

#### F123 Standard Build Trays

**Table 2. PC-ABS Filament Ordering Information**

Part Number	Description
<b>Filament Canisters <sup>1 2</sup></b>	
355-02260	PC-ABS (black), 92.3 cu in - Plus
310-20500	PC-ABS (black), 92.3 cu in - Classic
333-90701	PC-ABS (black), 90 cu in - F123
333-60701	PC-ABS (black), 60 cu in - F123
333-60700	PC-ABS (white), 60 cu in - F123
310-30500	SR-20 Soluble Support, 92.3 cu in - Classic
355-03130	SR-110 soluble support, 92.3 cu in - Plus
333-63500	QSR soluble support, 60 cu in - F123
<b>Printer Consumables</b>	
511-10501	T10 tip, 0.005 (0.127 mm) layer height
511-10301	T12 tip, 0.007 (0.178 mm) layer height
511-10401	T16 tip, 0.010 in. (0.254 mm) layer height
511-10701	T20 tip, 0.013 (0.330 mm) layer height
511-10901	T12SR20 tip, all layer heights
511-10100	T12SR100 tip, all layer heights
123-00401-S	F123 Standard Head (all layer heights)
325-00300 <sup>3</sup>	Low Temperature build sheet, 0.02x26x38 in. (0.51x660x965 mm)
325-00100 <sup>4</sup>	Low Temperature build sheet, 0.02x16x18.5 in (0.51x406x470 mm)
310-00100 <sup>5</sup>	Low Temperature build sheet, 0.03x16x18.5 (0.76x406x470 mm)
355-00100 <sup>6</sup>	Low Temperature build sheet, 0.02x14x16.5 in. (0.51x355x420 mm)
123-00304	F370 Build Tray, Standard

<sup>1</sup> Classic canisters are compatible with all Fortus 400mc and Fortus 900mc printers prior to s/n L502.

<sup>2</sup> Plus canisters are compatible with all Fortus 450mc, all Stratasys F900, and Fortus 900mc printers s/n L502 and up.

<sup>3</sup> Compatible with Fortus 900mc and F900.

<sup>4</sup> Compatible with Fortus 450mc, Fortus 900mc and F900

<sup>5</sup> Compatible with Fortus 360mc and 400mc

<sup>6</sup> Compatible with Fortus 380mc

## Physical Properties

Values are measured as printed. XY, XZ, and ZX orientations were tested. For full details refer to the [Stratasys Materials Test Report](#) (immediate download upon clicking the link). DSC and TMA curves can be found in the Appendix.

**Table 3. PC-ABS Physical Properties**

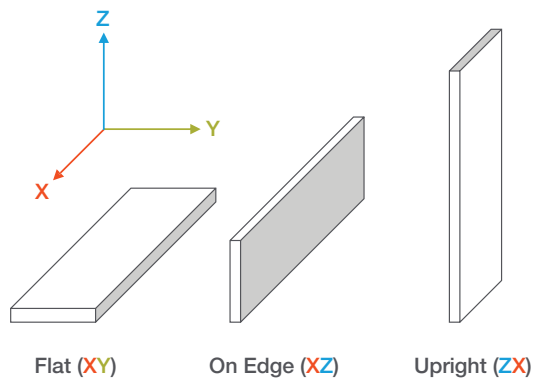
Property	Test Method	Typical Values	
		XY	XZ/ZX
HDT @ 66 psi	ASTM D648 Method B	125.0 °C (257.1 F)	
HDT @ 264 psi	ASTM D648 Method B	102.9 °C (217.2 F)	
Tg	ASTM D7426 Inflection Point	105.33 °C (221.59 F)	
Mean CTE	ASTM E831 (-50 °C to 95 °C)	-	72.96 μm/[m*°C] (40.53 μin/[in*°F])
	ASTM E831 (-50 °C to 35 °C)	59.87 μm/[m*°C] (33.26 μin/[in*°F])	-
	ASTM E831 (35 °C to 50 °C)	0.4816 μm/[m*°C] (0.2676 μin/[in*°F])	-
	ASTM E831 (50 °C to 90 °C)	-61.76 μm/[m*°C] (-34.31 μin/[in*°F])	-
Volume Resistivity	ASTM D257	> 6.84*10 <sup>14</sup> Ω*cm	
Dielectric Constant	ASTM D150 1 kHz test condition	2.62	2.74
	ASTM D150 2 MHz test condition	2.74	2.88
Dissipation Factor	ASTM D150 1 kHz test condition	0.001	0.002
	ASTM D150 2 MHz test condition	0.002	0.001
Specific Gravity	ASTM D257 @23 °C	1.10	

# Mechanical Properties

PC-ABS samples were printed with 0.010 in. (0.254 mm) layer heights on the F900. For the full test procedure please see the [Stratasys Materials Test Procedure](#) (immediate download upon clicking the link).

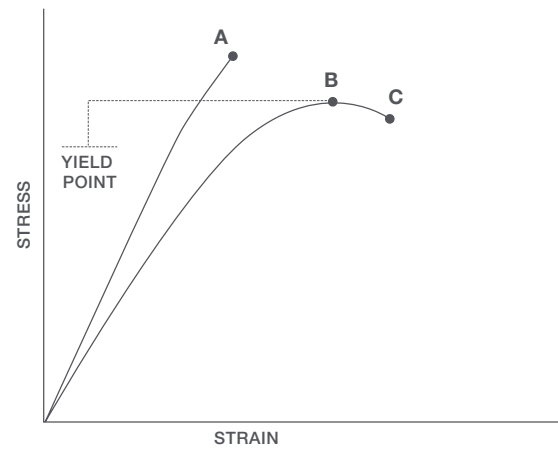
## Print Orientation

Parts created using FDM are anisotropic as a result of the printing process. Below is a reference of the different orientations used to characterize the material.



## Tensile Curves

Due to the anisotropic nature of FDM, tensile curves look different depending on orientation. Below is a guide of the two types of curves seen when printing tensile samples and what reported values mean.



A = Tensile at break, elongation at break (no yield point)

B = Tensile at yield, elongation at yield

C = Tensile at break, elongation at break

**Table 4. PC-ABS Mechanical Properties (Fortus 900mc - T16 Tip)**

		XZ Orientation <sup>1</sup>	ZX Orientation <sup>1</sup>
<b>Tensile Properties: ASTM D638</b>			
Yield Strength	MPa	36.5 (0.73)	No yield
	psi	5300 (110)	No yield
Elongation @ Yield	%	3.0 (0.083)	No yield
Strength @ Break	MPa	34.7 (0.83)	25.9 (1.6)
	psi	5040 (120)	3760 (230)
Elongation @ Break	%	4.7 (0.75)	1.8 (0.22)
Modulus (Elastic)	GPa	1.99 (0.038)	1.87 (0.19)
	ksi	288 (5.5)	270 (27)
<b>Flexural Properties: ASTM D790, Procedure A</b>			
Strength @ Break	MPa	No break	46.2 (2.0)
	psi	No break	6700 (290)
Strength @ 5% Strain	MPa	61.9 (1.2)	-
	psi	8970 (170)	-
Strain @ Break	%	No break	3.51 (0.30)
Modulus	GPa	1.86 (0.14)	1.68 (0.069)
	ksi	269 (20)	244 (10)
<b>Compression Properties: ASTM D695</b>			
Yield Strength	MPa	96.5 (3.6)	172 (13)
	psi	14000 (530)	25000 (1900)
Modulus	GPa	2.14 (0.19)	1.85 (0.050)
	ksi	310 (27)	269 (7.3)
<b>Impact Properties: ASTM D256, ASTM D4812</b>			
Notched	J/m	241 (40)	34.0 (6.0)
	ft*lb/in.	4.52 (0.75)	0.637 (0.11)
Unnotched	J/m	655 (127)	101 (23)
	ft*lb/in.	12.3 (2.4)	1.89 (0.43)

<sup>1</sup> Values in parentheses are standard deviations.

## Appendix

Figure 1. 2nd heating scan DSC data for the PC-ABS Flat (XY) sample.

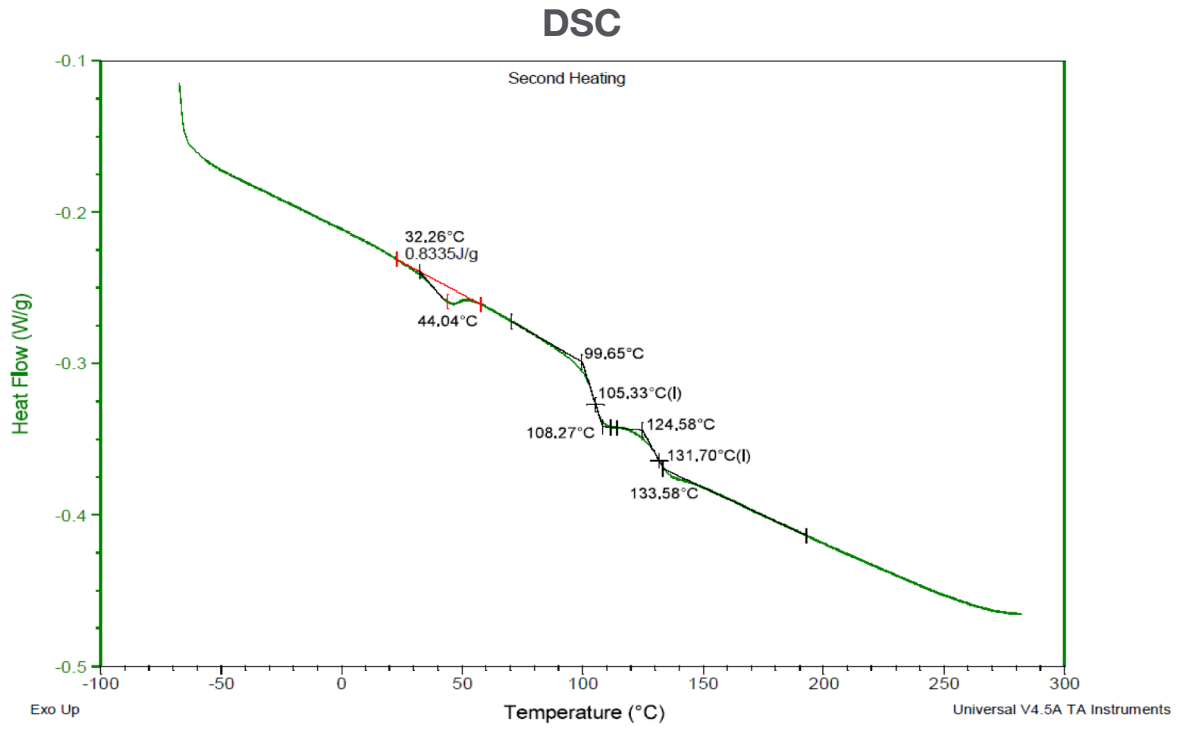




Figure 2. Dimension change data as a function of temperature for the PC-ABS Flat (XY) sample.

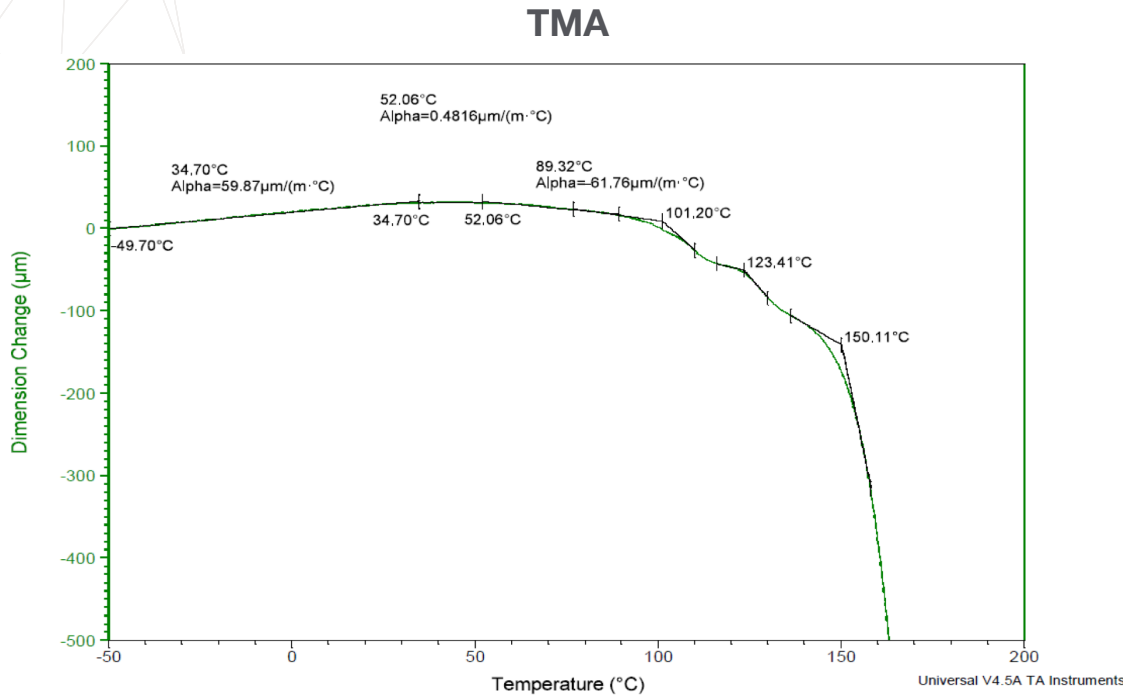


Figure 3. Dimension change data as a function of temperature for the PC-ABS On Edge (XZ) sample.

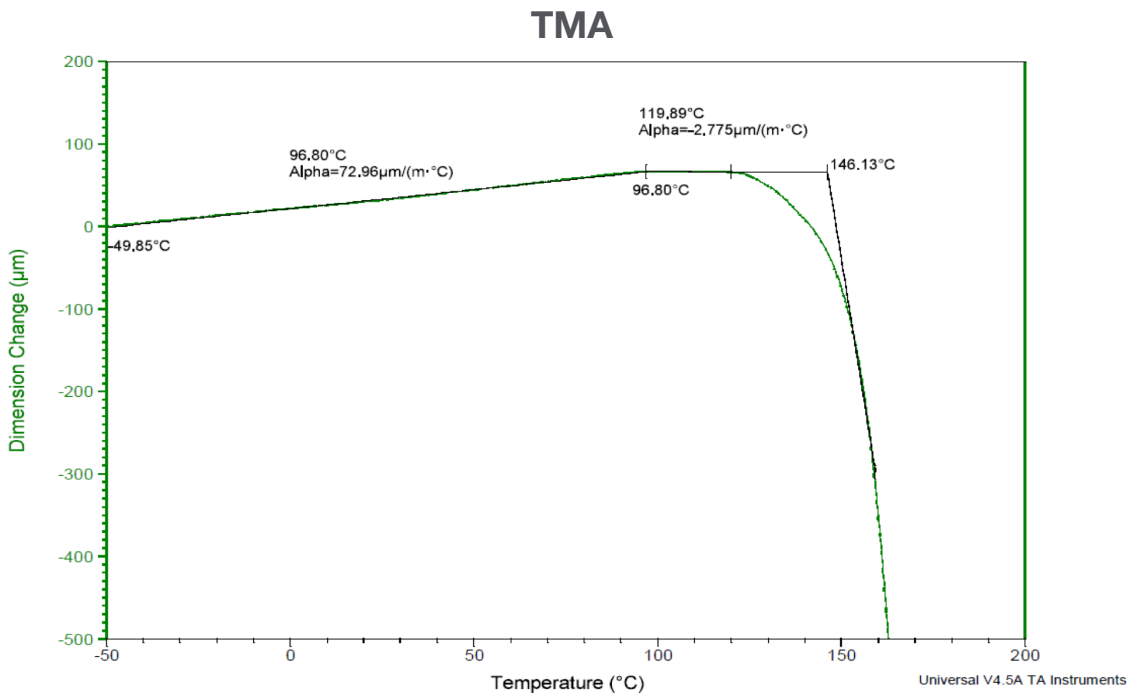
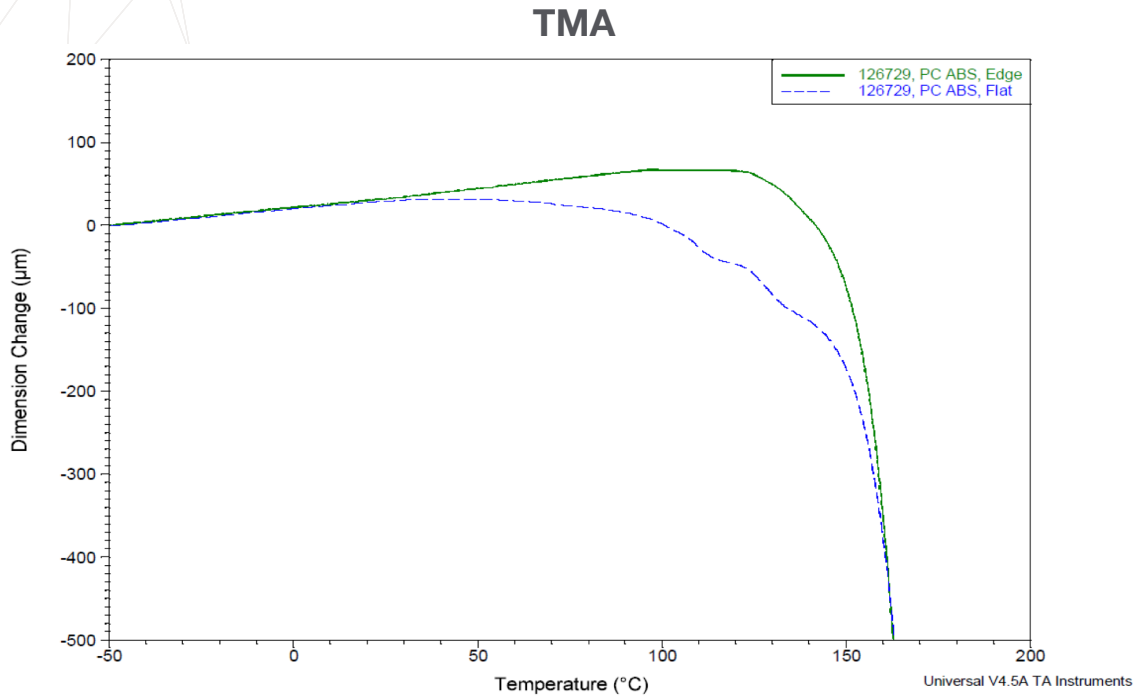


Figure 4. Overlay of the dimension change data for the Flat (XY) and On Edge (XZ) PC-ABS samples.



#### USA - Headquarters

7665 Commerce Way  
Eden Prairie, MN 55344, USA  
+1 952 937 3000

#### ISRAEL - Headquarters

1 Holtzman St., Science Park  
PO Box 2496  
Rehovot 76124, Israel  
+972 74 745 4000

[stratasys.com](http://stratasys.com)

ISO 9001:2015 Certified

#### EMEA

Airport Boulevard B 120  
77836 Rheinmünster, Germany  
+49 7229 7772 0

#### ASIA PACIFIC

7th Floor, C-BONS International Center  
108 Wai Yip Street Kwun Tong Kowloon  
Hong Kong, China  
+ 852 3944 8888



**GET IN TOUCH.**

[www.stratasys.com/contact-us/locations](http://www.stratasys.com/contact-us/locations)

